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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/575,488	05/19/2000	Pramodchandran N. Varivam	062004-1400	1016

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Scott A Horstemeyer  
Thomas Kayden Horstemeyer & Risley LLP  
100 Galleria Parkway NW Suite 1750  
Atlanta, GA 30339-5948

EXAMINER

WACHSMAN, HAL D

ART UNIT	PAPER NUMBER
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2857

DATE MAILED: 01/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



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8

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Commissioner for Patents

Hal D Wachsman  
Primary Examiner  
Art Unit: 2857

# Office Action Summary

Application No.

09/575,488

Applicant(s)

VARIVAM ET AL.

Examiner

Hal D Wachsman

Art Unit

2857

*mw*

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 17-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

1. Applicant's election with traverse of Group (species) I in Paper No. 7 is acknowledged. The traversal is on the ground(s) that Groups I-III although not obvious in view of each other are similar in subject matter and a "serious" burden would not be imposed on the Examiner to examine two or more of the groups. This is not found persuasive because the showing of a burdensome search is not a requirement of the Examiner in a species restriction. What is a requirement in a species restriction is satisfying MPEP 806.04(f) which states that for claims to be restricted to different species they must be mutually exclusive. To illustrate this, if we take claim 1 of species I, for example, we have the step "performing a low-cost optimized test on the circuit by applying an optimized input stimulus to the circuit", which is not found in claim 23 of species III. Claim 23 of species III, cites the feature "logic configured to evaluate the circuit response through use of the derived synthesizing functions to predict whether the performance parameters of the circuit satisfies the predetermined specifications for the circuit" which is not found in claim 1 of species I, therefore as shown above there is mutual exclusivity. ✓

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 17-28 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 7.
3. The drawings are objected to for the reasons stated on the attached PTO-948 form. Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

5. The Examiner respectfully notes a few grammatical errors in the specification:

Page 28, line 2, "...he total number..";

Page 30, last line, "...performanc parameters";

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The preamble of claim 1 states "A method for testing circuits having analog components..." however there is no reference in the body of claim 1 to the analog components. Claim 4 cites "The method of claim 1, wherein the low-cost optimized test is designed to maximize the sensitivity of the circuit response to changes in circuit process parameters" which cites an intention of use but does not particularly point out the design of the test that achieves this maximized sensitivity of the circuit response. Claim 7, cites "...wherein the optimized test is created such that the number of specification based tests needed is minimized" which cites an intention of use but does not particularly point out how the optimized test is created so as to achieve the minimization of the number of specification based tests. Claim 9, line 2, cites "the

specifications” however the antecedent basis is “one or more predetermined circuit specifications”. Claim 10, line 2, cites “the measurement response” however the antecedent basis is “circuit response”. Claim 12, line 2, cites “the various circuit specifications” however the antecedent basis is “predetermined specifications”.

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 2, 8, 10-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhattacharya et al. (5,748,647) in view of Dahbura et al. (4,991,176) and Balzer (5,327,437).

As per claim 1, Bhattacharya et al. (Abstract, col. 9 lines 31-40, col. 13 lines 59-62) disclose "capturing the circuit response to the input stimulus applied to the circuit". Bhattacharya et al. (Abstract, col. 2 lines 27-33, col. 3 lines 43-46, col. 7 lines 50-67, col. 8 lines 1-49, col. 10 lines 36, 37 and Tables 1, 4 and 5) disclose "evaluating the circuit response to predict... satisfies predetermined specifications for the circuit". It appears though that Bhattacharya et al. does not clearly disclose the performing and making steps. However, Dahbura et al. (Abstract, col. 2 lines 18-30, col. 4 lines 20-30) teach "performing a low-cost optimized test ...by applying an optimized input stimulus to the circuit". It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Dahbura et al. to the invention of Bhattacharya et al. as specified above because as taught by Dahbura et al. (Abstract) every testable aspect of the entity is guaranteed to be tested using a minimum number of steps which represents a considerable cost savings. It appears though that the above combination of references still does not clearly teach the making step. However, Balzer (see at least abstract) teaches "making a pass/fail determination for the circuit based upon the evaluation of the circuit response". It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Balzer to the inventions of Bhattacharya et al. and Dahbura et al. as specified above because as taught by Balzer (Abstract, col. 1 lines 28-40) measurement noise may result in an actual parameter value that falls outside of an acceptable range but due to noise, the measured value of that parameter may be inside the acceptable range, thereby causing the tested device to be erroneously accepted and alternatively, an

actual parameter value may fall within the acceptable range, but due to noise the measured value of that parameter may be outside of the acceptable range, thereby causing the tested device to be erroneously rejected. The techniques of Balzer would resolve the above measurement noise problem providing a method for testing which is operable in the presence of measurement noise.

As per claim 2, Bhattacharya et al. (Abstract, col. 2 lines 27-33, col. 3 lines 43-46, col. 7 lines 50-67, col. 8 lines 1-49, col. 10 lines 36, 37 and Tables 1, 4 and 5) disclose the feature of this claim.

As per claim 8, Bhattacharya et al. (Abstract, col. 2 lines 27-33, col. 3 lines 43-46, col. 7 lines 50-67, col. 8 lines 1-49, col. 10 lines 36, 37 and Tables 1, 4 and 5) disclose the feature of this claim.

As per claim 10, the low-cost optimized test has already been addressed in claim 1 above and Bhattacharya et al. (col. 2 lines 9-19, col. 6 lines 13, 14, col. 10 lines 36-47) disclose synthesizing functions which map a measurement response to circuit performance parameters.

As per claim 11, Bhattacharya et al. (col. 10 lines 36-44) disclose the feature of this claim.

As per claim 12, Bhattacharya et al. (col. 10 lines 36-44, Tables 1, 4 and 5) disclose the feature of this claim.

As per claim 15, it is inherent in the art that if the circuit has analog components than an analog stimulus such as a sinusoidal stimulus would be used for testing.



10. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bhattacharya et al. (5,748,647) in view of Dahbura et al. (4,991,176) and Balzer (5,327,437) as applied to claims 10 and 1 above respectively, and further in view of the Applicant's Admissions of the prior art.

As per claim 14, the Applicant's Admissions of the prior art (page 15, lines 11-16, of the specification) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the Applicant's Admissions of the prior art to the inventions of Bhattacharya et al. Dahbura et al. and Balzer as specified above because as taught by the Applicant's Admissions of the prior art (page 15, lines 13-16, of the specification) Multivariate Adaptive Regression Splines was a known tool which had the desirable properties of being able to approximate highly nonlinear functions accurately, able to handle large dimensionality of dependent variables, and was immune to the problem of over-fitting.

As per claim 16, the Applicant's Admissions of the prior art (page 24, lines 19, 20, of the specification) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the Applicant's Admissions of the prior art to the inventions of Bhattacharya et al. Dahbura et al. and Balzer as specified above because as taught by the Applicant's Admissions of the prior art (page 24, lines 19, 20, of the specification) genetic algorithms have shown the ability to move towards better solutions by selecting possible solutions from a large search space.

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11. The following references are cited as being art of general interest: Jay et al. which disclose the implementation of a synthesizer for a specification, Niwa et al. which disclose a controllability cost in a test pattern generation device, Kapur et al. which disclose in a synthesis system a method of generating a test pattern, Asaka which discloses logic synthesis for a testability system and Tipon et al. which disclose synthesized input vectors.

12. No claims are allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal D Wachsman whose telephone number is 703-305-9788. The examiner can normally be reached on Monday to Friday 7:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 703-308-1677. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Hal D Wachsman  
Primary Examiner  
Art Unit 2857

HW  
January 6, 2004